When Things Go Wrong - Making Paper Negatives

(*Strange Effects - And How to Cure Them*)

With the creation of photographic images when using the Paper Negative Process, there are numerable problems which may go not as “planed”. Here are a few examples of problems which are common.

Arista-EDU RC/VC - ISO= 6
Burke & James 5X7 / 4.5f - 250mm Lens
f-13 @ 1/2 Sec. - Medium Orange Filter
Dev. in Ansco-120 / Reg. Stop & Fix - 1 Minute

((Shown above (according to me) is a properly exposed paper negative and the resulting Positive.))

First - I wanted to show what I believe to be is a “properly” exposed, and developed photograph with it’s negative. Other photographers may have their own ideas as to just what is “proper”, and that is good. Because all art is subjective, and individual works from any photographer is what they feel is “correct”. In this article I shall attempt to show what can go wrong and some possible cures to these problems.

Secondly - Being that there are multiple things that may go wrong with the paper negative process, I feel that some expiations are needed to help the practitioner. The basic variable are:

- **Proper exposure.**
- **Balanced and correct ratios of developer chemicals,**
  (*either manufactured or “home brewed”*).
- **Temperature of chemicals of development.**
- **Timing of the development - to bring the negative to total development.**
- **Handling and Storage.**
- **What and where to capture images.**

A properly exposed image from the camera is made by Three very important Things. This is commonly known as the "*Exposure Triangle*":

The ISO - This is the "*speed*" or rather a standard number of the sensitivity of the media that the image shall be recorded on. The ISO of the triangle will be a constant in the calculation of the two other parts of this triangle, which are variables of the equation.

When dealing with paper used as the "film base" the sensitivity is much, much lower. Film's ISO varies from usually 25 to that of over 400. Photographic Papers are most often rated differently - But do NOT pay any attention to the ISO rating that sometimes comes with the "Fact Sheet" or instructions that comes with the paper. For the use of using photo paper for making negatives usually can be from ISO 3 to as high as 12. There are exceptions, of course, as with just about everything with using paper as "film". If the paper is from 35 to 50 years old from expiration date the ISO number would be as low as ONE (1), or a little lower; it would be like exposing a Wet Plate image. So - let us assume that we are using fresh photo paper. The ISO would be Three (3) to Six (6) and perhaps as high as Twelve (12). For this reason ALL papers to be used for the making of negatives must be first tested. (One MOST use a Spot Meter to achieve good results.)

The Aperture of the lens on the camera - This governs the amount of light that shall be admitted into the camera and shown on the focal plane, where the paper or film, resides in a light-tight holder. The lower the f-Stop number (i.e. 4.5 or 6.5) the More light is presented to the recording media. The higher that number (i.e. f-11 or f-16) are a smaller opening, the Less of the light. There is a "trade-off" in that with a f-4.5 only a small part of the total image will be in focus - as with still life and portraiture where you would want the face of the subject, or principal item, to stand out and the background fall off. = With Landscapes (personally) - I would use f-11 to f-45 to assure that all is in sharp focus.

The Shutter Speed of the lens - This governs the amount of time that the light shall be allowed to "stay" on the focal plane. The aperture and the shutter speeds are retaliative together.

OK - Now = Into the darkroom we go -

Balanced and Correct Ratios of Developing Chemicals:

What I mean when I say “Balanced” chemicals has a lot to do with a developer that one would concoct at home (or “home brewed”). The manufactured developers are already “balanced” and all one would do is to follow the instructions on the label, or “fact sheet” that comes with that developer. (Or so one would believe.) These instructions for the ratios are for the “normal” use of the photo paper, which is to use under the light of an enlarger to make prints. This is NOT the “proper” ratio for the making of paper negatives.

The light from an enlarger is much less than that of the sun which is reflected off of objects outside in the world. Knowing this one can realize that in working with the developer it must be two to three times more of a ratio. If the instructions read that you are to use a 1:2 ration of developer to water - use TWICE the amount of water for development of paper negatives. I like to use a 1:4 with the developers that state to use a 1:2. And sometimes a 1:6 ratio is needed. If the developer is too strong (i.e. 1:2) the very beginning of that would be somewhere from 2 to 5 seconds. And the over development would occur at about 20 seconds - which would be totally Black on the negative.

Remember - With all chemistry, that the ratio numbers are 1:?. (One into whatever) The first number IS the substance that one desires to dilute with water. After the colon (:) the other number is the water. (i.e.= 1:1 or 1:4 or 1:6 ect., ect). A 1:1 ratio would be a “STOCK Solution” - as like a package of Dektol where it reads that this package is to make ONE GALLON = You dissolve the powder in One Gallon of water. Thus - a 1:1 Stock solution. And from this 1:1 you will further dilute to make your “Working Solutions” of a 1:4.

So - with manufactured developers one would purchase, the instructions will state to use a 1:2 working solution for development of PRINTS from the enlarger. >>>—> ***WAIT right there***..... We are **NOT** making PRINTS. We are making *Paper Negatives*, and THAT is a different item altogether. And we MUST further dilute (or readjust) this ratio to use - I use a 1:4 and sometimes a 1:6. And too, as with almost everything with the making of Paper Negatives, Experimentation IS the key to success. There will be failures, and that is only part of the experimentation process, we all LEARN from these “mistakes”. Keep a NOTEBOOK, and write everything in it - What works and what does not work well. After all - You are a “Experimental Scientist”. Do not complicate the issues with “worry” = Just do IT.

I might add that for truly better control of your developers - consider Making Your Own from the “raw” (basic) chemicals. In the long run, it is more cost effective, and to have more control over your development processing. (Not to mention the pride you will have in knowing that YOU made everything in total. :-))

STOP and FIXERS-

The second phase of the chemical development process is to STOP the development before you loose the image. This is usually done with an Acid - ***Acidic acid***. It is rather cheap to by online or at a "brick & mortar" store. I prefer the "Indicator Stop Bath" as it will change from a "Yellow" to a Purple color when it is time to dump and change. The Kodak Indicator Stop dilution is a 1:32 (Ounces not milliliters). I measure out ONE (1) Ounce of acidic acid to thirty-two (32) ounces of water. I add the ACID into the WATER. (***This is common practice with ALL acids. = Do NOT do it the other way = It will react violently and splatter all over the place. Believe me, you do NOT want this stuff in your eyes. == You will not be a very good photographer if you blind yourself.***) ==++== By the way = You can use common white vinegar to use a your Stop Solution - Take ½ gallon of Vinegar and add ½ gallon of Water to it. (The only problem is that you can never tell when it goes bad.)

The third step is "***Fixation***"-

The use of a "Fixer" is to, of course, Keep the image from degrading because of the light and other things that would happen if it is just left out. There are very small particles of Undeveloped silver halides that were not totally developed and these MUST be removed. ***Potassium Thiosulfate*** is the most common manufactured Fixer to be bought. There are some other chemicals added to this fixer to help Speed Up the fixation process, as well as Harding agents. These work very well, in preserving the image.

I prefer to make my own, from the chemical Sodium Thiosulfate. This was the more "traditional" fixer used since the beginning of photography - (*Hey! If it WORKS = Don't Mess with it.*) This time old fixer does require a longer time to work, about 20 to 35 minutes - And Must be agitated more so than the manufactured makes. Sodium Thiosulfate can be had at any "swimming pool suppliers". It is cheap and a 5 pound bag will last you a year or two, depending on your workflow. The only drawback is that it goes into oxidation rather rapidly. I use one liter for every 24 or 30 Four by Five negatives. I usually do not keep it over 7 days in the bottle after the first use. I toss it out. I do make 3.5 liters at a time and it holds rather well for a month or two in a sealed bottle.

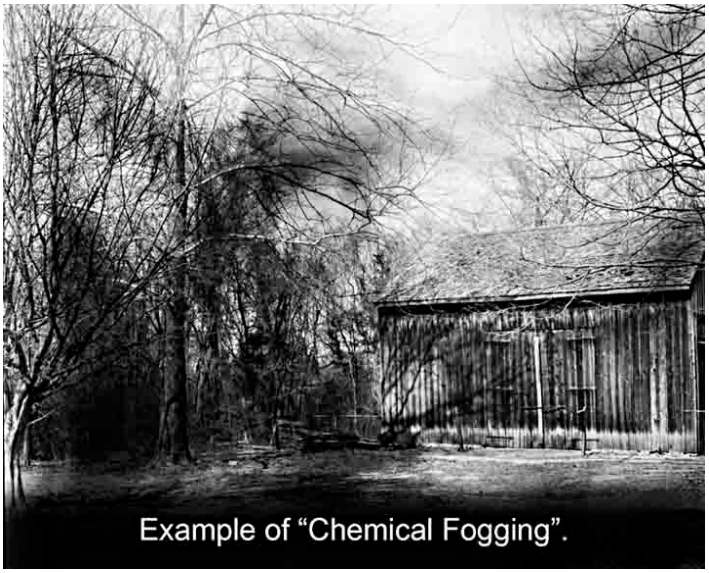
- Temperature of chemicals of development.

Each developer - stop - & fixer should be all equal of their temperature in the darkroom. The recommended temp. is that of 20 degrees Centigrade, or 68 degrees Fahrenheit. If the temp can not be these numbers - allowances must be made. My darkroom area has a winter temp of about 68 F. So not a problem. HOWEVER - in the summers, I have seen the temps go as high as 78 or 80. (Saint Louis Weather.) In these hot months I must use less time or a more of a dilution of my developer, (i.e. a 1:6 ratio).

- Timing of the development - to bring the negative to total development.

So far I have explained the dilutions and ratios of the developers, the Stop & Fixer, and the temps. For good paper negative image making. Now the very important item of TIME to Full Development.

When I say Full Development I mean when the developer can not develop any more of the paper negative. Sometimes - if you leave the negative (or positive) in the developer too long - it will degrade. Chemical burn, streaks and ugly blotches. "Chemical Burn" is a very common problem with the creation of Paper Negatives. There are two causes for this. The developer is too strong and must be either diluted again, or an addition of Potassium Bromide 10% - 20% solution must be added. (Potassium bromide is the restrainer of any developer). OR that the temp. is too high (Above 80 Degrees F.)



(Shown above are two examples of "Chemical Fogging")

(And Here - Above - is NOT a chemical fogged image (NOTE the Dilution)

((One more note about the temperature, particularly that of the developers. On a trip in the early sprint of 2020, I was in my pop-up camper "*darkroom area*" where the ambient temp, at night, was that of 55 Degrees F. The developer was about the same, and I did not wish to heat the chemicals but used them as they were. The development time was of course a bit longer (*I think about 1 and a half minutes*) the outcome was very nice. The ratio of developer was that of a 1:4. Now - I sometimes put two ice cubes in my 75 F. Solution to cool it and to lengthen the time a little.))

I have a little "*Rule of Thumb*" that I use to find out if the FULL development will be about a full one minute. (*A FULL Development is where the image does not change in the look of the total outcome.*) This can be from 45 seconds to that of 90 seconds, depending on the ratio and the temp of the solution. Along with that full development is to first "test" that developer when using for the first batch of negatives that will be developed with the same bottle. That "rule of thumb" is, when on a photo shoot, to make two or three images of anything at the proper exposure settings. In that manner, one shall know if the developer will need "adjustments". After the days collection of negatives and in the safelight of the darkroom, set up the trays, fill to a desired level and then time the first "test" image. (*You will need to time this in seconds.*) I start the timer five seconds BEFORE the "Zero" on the timer - and insert the "test" negative into the solution after counting to 5 seconds. Then when the very first sight of the image begins to show in the developer, I glance at the timer to see if it is 15 to 20 seconds. IF that image begins to show at 5 to 10 seconds – THAT is way too short of a time, and you WILL get "Chemical Burn". However - If that beginning is that of 15 - or better - 20 seconds, you shall have the FULL development at somewhere from 45 to 90 seconds of time. (I advise that the making of three "test" negatives is good as one may have to readjust to a more dilution to reach the desired "look" one wants. After that test for dilution ratio, I know that the rest of my negatives will come to full development in a desired time without chemical burn. I call this = "***Development by Timed Inspection***".

- Handling and Storage.

Some people do not care about this part because they have stored their Paper Negative on their Hard Drive. And for them, that is enough. NOT for me - Thank You Very Much. The reason (for me that is) that in 1974 I had a house fire that took EVERYTHING. That included ALL of my prints and more importantly, all my negatives from the age of 12, to that time of the fire. It was devastating to say the least. Not only do I save ALL my images on THREE different hard drives, I keep one H.D. of ALL the negatives and prints from scannings in a bank vault safety deposit box. Also one at home, and another at my sister's house. (I will never ever loose my work again.) More over - I also keep all of the orginal paper negatives at home in a "fireproof" box as well. Hey! Do what You want. As for me = "*Once burned, twice shy*".

- What and where to capture images.

As the great Alfred Stiegletz said - "*Wherever there is LIGHT, one can make a photograph.*"

As to just What you want to capture an image of - that is totally up to each photographer who has a camera in their hands, or on a tripod. The selection is everywhere.

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-Other Problems-

The other common problems are that of "Light Leaks". Particularly for Large Format photographers. The bellows can develop small breaks - called "pinholes". The film holders can also have light leaks as well. The wrong placement of the film holder, or not be well seated or secured into the slot at the rear of the camera will also have sometimes large light leaks. All of these problems can be easily repaired, once you have figured out how to do it. One of the more common is the light leaks from old film holders. They are usually made of wood, with a little door or "flap" at one side where you insert the film or paper. The newer ones are made of plastic. Each have a taped "flap" on the side.

Light Leak Separation
Light Leak Separation
Here you may see the worn ends of the "Hinge-Tape" that was the problem and causing a "Light-Leak" to the interior.

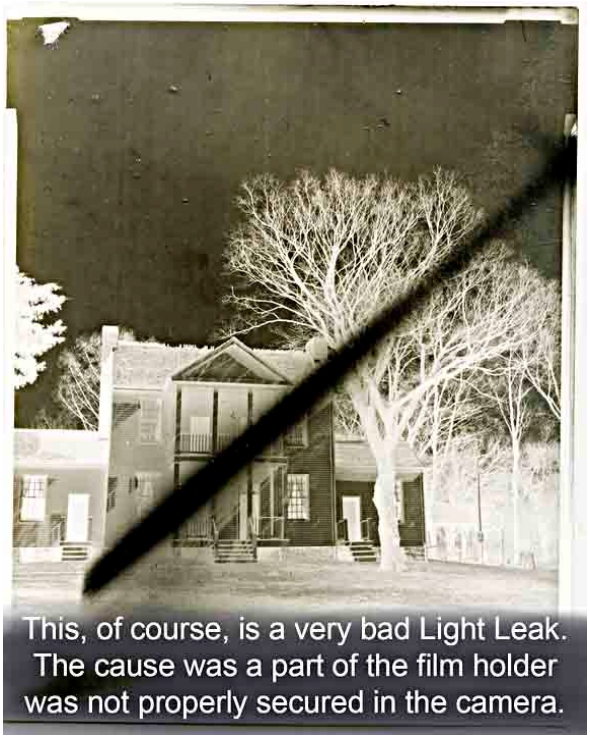
(*Shown Above Is an example of a Small Light Leak and The Holder.*)

RONSONOL
LIGHTER FUEL
COMBUSTIBLE
PARA ENCENDEDOR
Remove The Old Tape and Ends of The Holder - After Removal of The Dark Slides of Both Sides - And CLEAN with Fighter Fluid

(*Shown Above Is the Removal of the Old Tape - And Removal of the Flaps.*)

After cleaning with “Lighter Fluid”, to remove the old glue, cut to fit a section of “Gaffer’s Tape” to the side of the film holder - With the little flaps in their respective place on the holder. The cut off the excess.

Shown below - Is an example of a Large Light Leak. Sometimes from a break in the bellows of a Large Format camera, and or, the wrong placement of a os a film holder that was not properly secured into the rear of the camera.

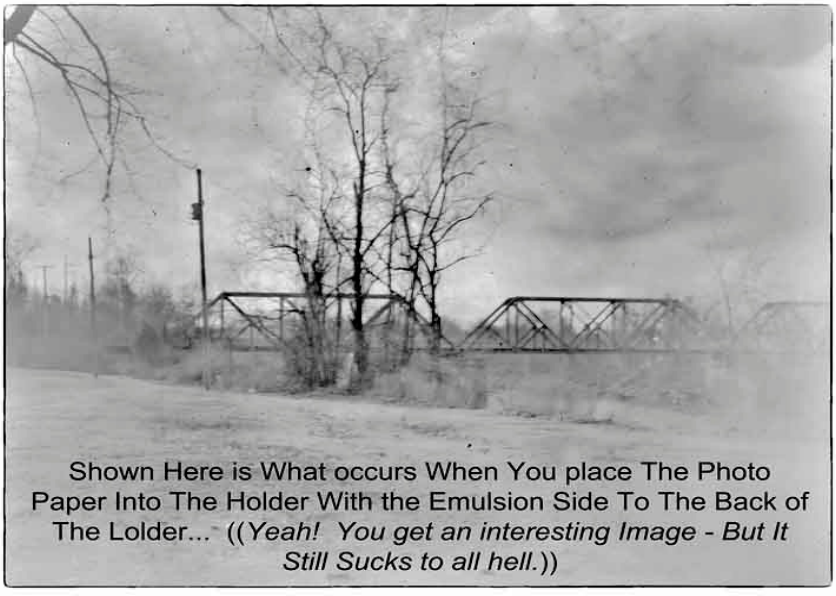


This, of course, is a very bad Light Leak. The cause was a part of the film holder was not properly secured in the camera.

The repair of a bellows is not as easy as repairing a film holder. However - It can be temporally “patched” with a small piece of Gaffer’s Tape, Electrical Tape, or some Black Gooey Substance, like silicone sealant. *(If using the sealant - Make Sure that it is Completely Cured Before use.*)

If it is from the wrong placement of a film holder - Next time make sure that it is well seated into it proper placement at the rear of the camera.

One more problem that I had when beginning large format work is that I did not get the film with the emulsion side to the Outward part of the film holder. And I did this AGAIN rather recently using Matte Paper.



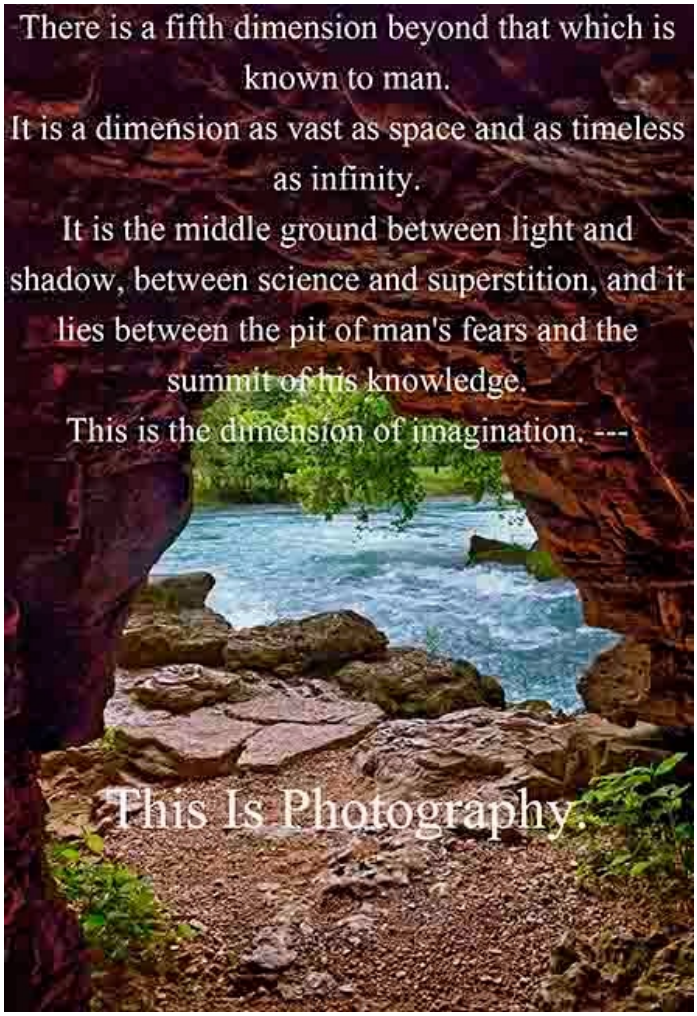
Shown Here is What occurs When You place The Photo Paper Into The Holder With the Emulsion Side To The Back of The Lolder... ((*Yeah! You get an interesting Image - But It Still Sucks to all hell.*))

There are other problem that will occur - in this article I have tried to show the more common that would apply to the making of Paper Negatives. Problems that arise can be figured out by anyone, and the “cures” - or repairs - are not as difficult as one may think.

THINK, observe, see what other experimenters have accomplished to overcome dilemmas that have occurred to them. Search the Internet for any and all information. Watch VIDs on YouTube = Do NOT be troubled with asking for any help with any problems you might have. Remember = The Only “stupid question” is the one that you yourself Keep to Yourself. You will never know the true answer to that.

NOW -

Get Out There and Make Your Paper Negatives - Gotz Problems? Let someone know. There is a very good possibility that others have the same things occur and they know what to do. Even when you might think this is only happening to you.


There is a fifth dimension beyond that which is known to man.
It is a dimension as vast as space and as timeless as infinity.
It is the middle ground between light and shadow, between science and superstition, and it lies between the pit of man's fears and the summit of his knowledge.
This is the dimension of imagination. ---
This Is Photography.

Thank you for reading this article. I sincerely hope that it will help you.

May The Light Be With You.

James R. Kyle, Photographer, Saint Louis, Missouri, U.S. of A.